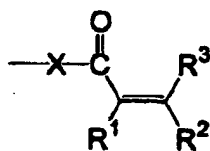
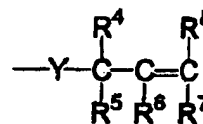


WHAT IS CLAIMED IS:

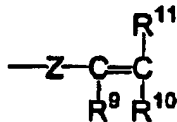
1. A heat mode type negative image recording material comprising (A) a polymer compound that is insoluble in water but is soluble in an alkali aqueous solution and has at least one of groups represented by the following general formulae (1) to (3) on a side chain; (B) a photothermal conversion agent; and (C) an onium salt compound which forms radicals by heat mode exposure with light that is capable of being absorbed by said photothermal conversion agent (B), said heat mode type negative image recording material being capable of recording an image by heat mode exposure:



General formula (1)



General formula (2)



General formula (3)

wherein R^1 to R^{11} each independently represents a monovalent organic group; X and Y each independently represents an oxygen atom, a sulfur atom or $-\text{N}(\text{R}^{12})-$; Z represents an oxygen atom, a sulfur atom, $-\text{N}(\text{R}^{12})-$ or a phenylene group; and R^{12} represents a hydrogen atom or a monovalent organic group.

2. A heat mode type negative image recording material according to claim 1, wherein said image recording material further comprises (D) a radical polymerizable compound.

3. A heat mode type negative image recording material according to claim 1, wherein said polymer compound (A) is selected from a poly(meth)acrylate resin, a polyurethane resin and an acetal modified polyvinyl alcohol resin.

4. A heat mode type negative image recording material according to claim 1, wherein said polymer compound (A) is a poly(meth)acrylate resin.

5. A heat mode type negative image recording material according to claim 1, wherein said polymer compound (A) contains a carboxyl acid group in an amount of from 0.8 to 1.6 meq/g and has a weight average molecular weight of from 80,000 to 180,000.

6. A heat mode type negative image recording material according to claim 1, wherein said polymer compound (A) has said side chain groups represented by the general formulae (1) to (3) bonded to a polymer main chain through a linear or branched alkylene group.

7. A heat mode type negative image recording material according to claim 1, wherein said photothermal conversion agent (B) is a cyanine dye.

8. A heat mode type negative image recording material according to claim 1, wherein said onium salt compound (C) is a sulfonium salt compound.

phenylene group; and R^{12} represents a hydrogen atom or a monovalent organic group.

10. A process for making an image on a lithographic printing plate comprising the steps of:

(a) forming a heat mode type negative image recording material comprising:

(A) a polymer compound that is insoluble in water but is soluble in an alkali aqueous solution and has at least one of groups represented by the following general formulae (1) to (3) on a side chain;

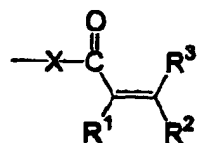
(B) a photothermal conversion agent; and

(C) an onium salt compound forming radicals by heat mode exposure with light that is capable of being absorbed by said photothermal conversion agent (B), said heat mode type negative image recording material being capable of recording an image by heat mode exposure,

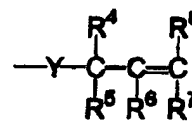
(b) disposing said heat mode type negative image recording material on a support to form a lithographic printing plate original,

(c) exposing said lithographic printing plate original with an infrared laser to form a latent image and,

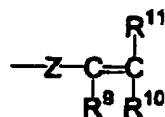
(d) forming an image by using an alkali aqueous solution to develop the latent image:



General formula (1)



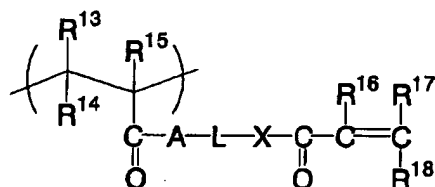
General formula (2)



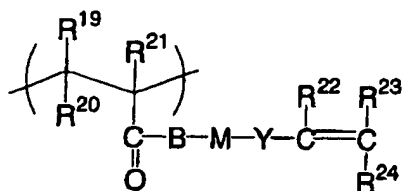
General formula (3)

wherein R^1 to R^{11} each independently represents a monovalent organic group; X and Y each independently represents an oxygen atom, a sulfur atom or $-\text{N}(\text{R}^{12})-$; Z represents an oxygen atom, a sulfur atom, $-\text{N}(\text{R}^{12})-$ or a phenylene group; and R^{12} represents a hydrogen atom or a monovalent organic group.

11. A heat mode type negative image recording material comprising (A') a polymer compound that is insoluble in water but is soluble in an alkali aqueous solution and has at least one of structural units represented by the following general formulae (4) and (5) in an amount of 30 mol% or more; (B), a photothermal conversion agent; and (C') a compound forming radicals by heat mode exposure with light that is capable of being absorbed by the photothermal conversion agent (B), said heat mode type negative image recording material being capable of recording an image by heat mode exposure:



General formula (4)



General formula (5)

wherein A, B and X each independently represents an oxygen atom, a sulfur atom or $\text{-N-(R}^{25}\text{)-}$; L and M each independently represents a divalent organic group; R^{13} to R^{24} each independently represents a monovalent organic group; Y represents an oxygen atom, a sulfur atom, $\text{-N-(R}^{26}\text{)-}$ or a phenylene group, which may have a substituent; and R^{25} and R^{26} each independently represents a hydrogen atom or a monovalent organic group.

12. A heat mode type negative image recording material according to claim 11, wherein said image recording material further comprises (D) a radical polymerizable compound.

13. A heat mode type negative image recording material according to claim 11, wherein said polymer compound (A) is a poly(meth)acrylate resin.

14. A heat mode type negative image recording material according to claim 11, wherein said polymer compound (A) contains a carboxyl acid group in an amount of from 0.8 to 1.6 meq/g and has a weight average molecular weight of from 80,000 to 180,000.

15. A heat mode type negative image recording material according to claim 11, wherein L and M in the general formulae (4) and (5) each independently represents a linear alkylene group.

16. A heat mode type negative image recording material according to claim 11, wherein said photothermal conversion agent (B) is a cyanine dye.

17. A heat mode type negative image recording material according to claim 11, wherein said compound forming radicals (C') is an onium salt compound.

18. A heat mode type negative image recording material according to claim 11, wherein said compound forming radicals (C') is a sulfonium salt compound.

19. A lithographic printing plate original comprising:

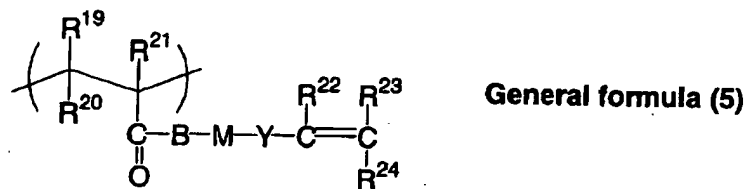
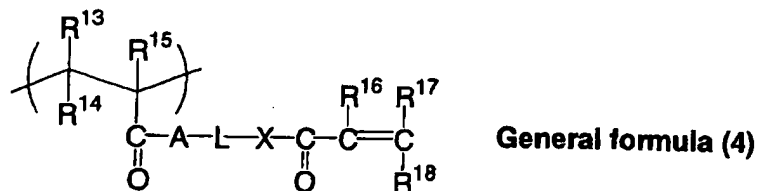
a support and

a heat mode type negative image recording material provided on the support, said heat mode type negative image recording material comprising:

(A') a polymer compound that is insoluble in water but is soluble in an alkali aqueous solution and has at least one of structural units represented by the following general formulae (4) and (5) in an amount of 30 mol% or more;

(B) a photothermal conversion agent; and

(C') a compound forming radicals by heat mode exposure with light that is capable of being absorbed by the photothermal conversion agent (B), said heat mode type negative image recording material being capable of recording an image by heat mode exposure:



wherein A, B and X each independently represents an oxygen atom, a sulfur atom or -N-(R²⁵)-; L and M each independently represents a divalent organic group; R¹³ to R²⁴ each independently represents a monovalent organic group; Y represents an oxygen atom, a sulfur atom, -N-(R²⁶)- or a phenylene group, which may have a substituent; and R²⁵ and R²⁶ each independently represents a hydrogen atom or a monovalent organic group.

20. A process for making an image on a lithographic printing plate comprising the steps of:

(a) forming a heat mode type negative image recording material comprising:

(A) a polymer compound that is insoluble in water but is soluble in an alkali aqueous solution and has at least one of groups represented by the following general formulae (4) and (5) on a side chain;

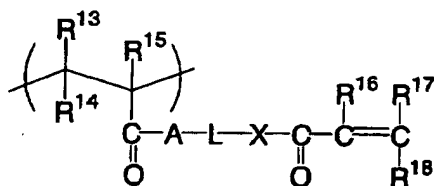
(B) a photothermal conversion agent; and

(C) an onium salt compound forming radicals by heat mode exposure with light that is capable of being absorbed by said photothermal conversion agent (B), said heat mode type negative image recording material being capable of recording an image by heat mode exposure,

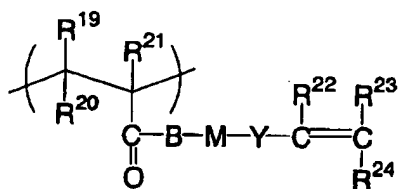
(b) disposing said heat mode type negative image recording material on a support to form a lithographic printing plate original,

(c) exposing said lithographic printing plate original with an infrared laser to form a latent image and,

(d) forming an image by using an alkali aqueous solution to develop the latent image:



General formula (4)



General formula (5)

wherein A, B and X each independently represents an oxygen atom, a sulfur atom or -N-(R²⁵)-; L and M each independently represents a divalent organic group; R¹³ to R²⁴ each independently represents a monovalent organic group; Y represents an oxygen atom, a sulfur atom, -N-(R²⁶)- or a phenylene group, which may have a substituent; and R²⁵

and R^{26} each independently represents a hydrogen atom or a monovalent organic group.

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